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Assessments of Gaspereau and Striped Bass Stocks of the Maritime Provinces, 2000

Proceedings of the Diadromous Subcommittee
Regional Advisory Process
Gulf and Maritime Regions

March 19-21, 2001
Dartmouth, Nova Scotia

Kimberly A. Robichaud-LeBlanc and Peter G. Amiro (Editors)

Department of Fisheries and Oceans
Science Branch, Maritime Region
Bedford Institute of Oceanography
P.O. Box 1006, Dartmouth
Nova Scotia, Canada
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April 2001

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Foreword

The purpose of this proceedings is to archive the activities and discussions of the meeting, including research recommendations, uncertainties, and to provide a place to formally archive official minority opinions. As such, interpretations and opinions presented in this report may be factually incorrect or mis-leading, but are included to record as faithfully as possible what transpired at the meeting. No statements are to be taken as reflecting the consensus of the meeting unless they are clearly identified as such. Moreover, additional information and further review may result in a change of decision where tentative agreement had been reached. Therefore, only the Stock Status Report(s), which contain the consensus decisions of the meeting, should be used as sources of information on the status of the resource assessed. Additionally, any summary on the stock status presented in this proceedings should not be referenced. The Stock Status Reports are supported by Research Documents which will be finalized from the working papers presented at the meeting.

Avant-propos

Le présent compte rendu fait état des activités et des discussions qui ont eu lieu à la réunion, notamment en ce qui concerne les recommandations de recherche et les incertitudes; il sert aussi à consigner en bonne et due forme les opinions minoritaires officielles. Les interprétations et opinions qui y sont présentées peuvent être incorrectes sur le plan des faits ou trompeuses, mais elles sont intégrées au document pour que celui-ci reflète le plus fidèlement possible ce qui s'est dit à la réunion. Aucune déclaration ne doit être considérée comme une expression du consensus des participants, sauf s'il est clairement indiqué qu'elle l'est effectivement. En outre, des renseignements supplémentaires et un plus ample examen peuvent avoir pour effet de modifier une décision qui avait fait l'objet d'un accord préliminaire. Par conséquent, ce sont uniquement les Rapports sur l'état des stocks, reflétant les décisions consensuelles prises à la réunion, qui doivent être les sources de renseignements au sujet de l'état des ressources évaluées. Les brefs sommaires de rapport sur l'état des stocks présentés dans le présent compte rendu ne doivent pas non plus être considérés comme des textes de référence. Les Rapports sur l'état des stocks sont appuyés par les Documents de recherche, qui seront établis définitivement à partir des documents de travail présentés à la réunion.

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ABSTRACT

This report summarizes the proceedings of the peer review meeting for assessing the status of the gaspereau (*Alosa* spp.) and striped bass (*Morone saxatilis*) stocks of the Maritime provinces. The review took place from March 19 to 21, 2001, in Dartmouth, Nova Scotia. Available information were detailed in six stock assessment working papers and one review document which were reviewed by both designated referees and other participants. Comments and concerns expressed during the review, with the author's responses, are summarized in the rapporteur reports contained within. These reports also detail the research recommendations for both the coming year and the long term. Products from the review include six research documents, two Stock Status Reports highlighting the status of both Maritime gaspereau and striped bass stocks and this Proceedings document.

RÉSUMÉ

Le présent document est un compte rendu sommaire de la réunion d'examen par les pairs ayant porté sur l'évaluation de l'état des stocks de gaspareau (*Alosa* spp.) et de bar rayé (*Morone saxatilis*) des provinces Maritimes, réunion qui a eu lieu du 19 au 21 mars 2001, à Dartmouth (Nouvelle-Écosse). Des renseignements détaillés ont été présentés dans six documents de travail sur l'évaluation des stocks et un document d'examen, qui ont été passés en revue par les arbitres désignés et par les autres participants. Les observations et préoccupations formulées durant l'examen, ainsi que les réponses des auteurs, sont résumées dans les rapports présentés par les rapporteurs et contenus dans le document. Ces rapports exposent aussi en détail les recommandations de recherche visant l'année à venir et le plus long terme. Les produits issus de l'examen se composent de six documents de recherche, de deux Rapports sur l'état des stocks de gaspareau et de bar rayé de la Région des Maritimes et du présent Compte rendu

INTRODUCTION

This report provides records of the peer review meeting for assessing the status of both gaspereau (Alewife, *Alosa pseudoherengus* and blueback herring *Alosa aestivalis*) and striped bass (*Morone saxatilis*) stocks in the Maritime provinces (Appendix 5). Assessment of the status of gaspereau stocks of the Maritime provinces were reviewed in support of the gaspereau fisheries of 2001 and beyond and until the next full assessments are conducted. Specifically, the gaspereau fisheries and status of the Miramichi River, Gulf New Brunswick; Margaree River, Gulf Nova Scotia; returns to Mactaquac Dam on the Saint John River; and Gaspereau River, Nova Scotia; were reviewed. The last stock status report for gaspereau of the Maritime provinces dates to 1996 (DFO D3-17).

In support of the management plan developed for striped bass in the Maritimes in 1999, a review of stock status and changes in status relative to expectations was conducted. Specifically, both the southern Gulf stock was reviewed and a proposal to assess the Shubenacadie (Bay of Fundy) stock was presented. The last striped bass stock status report dates to 1998 (DFO D3-22).

The Regional Peer Review took place from March 19 to 21, 2001 at DFO facilities (Canadian Coast Guard Base and Bedford Institute of Oceanography) in Dartmouth, Nova Scotia. The review committee was comprised of individuals from DFO Science (Maritimes and Gulf), DFO Fisheries Management, Nova Scotia Power and several universities (Acadia, Dalhousie, Nova Scotia Agricultural College) (Appendix 1). Letters of invitation (Appendix 2) were distributed to various organizations (Appendix 3) who may have a particular interest in one of the stocks. The review was chaired by Mr. Peter G. Amiro.

Six working papers (Appendix 6) on topics pertaining to the status of both the gaspereau and striped bass stocks in the Maritime provinces were tabled and five were peer reviewed during the three-day session (Appendix 4). The comments and concerns, with the author's responses, are summarized in the rapporteur reports prepared for each of the six working papers presented and are detailed in pages 6-14 of this report. Management and research recommendations produced at the meeting and extracted from the working papers are listed together in Appendix 7.

PEER REVIEW

GASPEREAU

Working Paper: Chaput, G., and G. Atkinson. 2001. The gaspereau fisheries (*Alosa pseudoharengus* and *A. aestivalis*) of the Miramichi River with updates on the fishery of the Richibucto River of Gulf New Brunswick. RAP 2001/19.

Referees: N/A

Rapporteur: David Cairns

Issues/concerns

- Discussion around issue of fishing effort. There is interest in the industry for a suspension of the weekend ban on fishing, and also permission to move fishing effort from other estuaries to the Miramichi. Comment was made that it would seem out of place to increase fishing pressure on a resource that is already over-exploited. The question was raised about the markets. Response - Many are salted. Some go to lobster bait, some go to the Caribbean. The market is strong at the first of the year and then drops off. They get 10 cents a pound, max.

- Discussion regarding their migration and if they stray. Response - Limited tagging at Millbank. Little information. Blueback are river spawners, alewives prefer lakes. Alewives go a long way up.

- Question if whether or not we should have different reference points for the two species, given these differences in life history? Response - The species are close in most respects. They are so close that we should go with the same reference points.

- Discussion regarding spawner-recruit relation to get an idea of productivity. It would make sense to reduce pressure on alewives by lengthening closures. The question of whether alewives are overfished was raised. Proportion of previous spawners has deteriorated drastically for alewives. There are conservation and ecological effects such as nutrient transport to headwaters. Comment was made that we seem to be aiming for keeping the fishermen happy without endangering the stock. It was said that we're near a danger point on the Miramichi and we need to look at a decrease in fishing effort. It was asked if, with the available data, MSY could be calculated from stock and recruitment information. The response was that there are problems with this and with these models we could end up overfishing. Response - There is a request in the works for compensation for low production from the years in which there was construction on the River which allegedly caused low production. The river hydrology has changed. This would cause problems for stock-recruit analysis.

- There was a question regarding whether we know historically what the Miramichi produced in terms of the 2 species. Response - First samples were in mid 1970s. Season closure arose from need to avoid capture of bright salmon. There is also problem with pushing back the season end because of the effects of warmer water on quality. Also striped bass bycatch is an issue.

- Question was asked as to whether one could use data on 2 year-olds as a recruitment predictor. Reponse - Lots of variability in catches and partial recruitment would limit this possibility. It is known that heavy exploitation drives down the age and size of first recruitment. Comment was made that in 1997 there were very low catches in the Miramichi and very high catches in the Richibucto. Fishermen took this as evidence that the construction work on the river forced the diversion of spawning activity in that year.

- Point was made that the estimated fishing mortalities are much higher than those postulated by biological reference points. If we are using something other than biological reference points to generate advice, this alternate approach should be documented and defined. It was pointed out that the central point is that F has been going up. Response - We need to define what the reference points aim at. There may be environmental factors that vary mortality or recruitment. 1992 was a very wet year, with trap washouts on the Miramichi. The lowest alewife cohort of the time series was produced in this year.

- Question was asked about what happens to the non-maturing fish. Response - They are a very small proportion. We catch a few of them in the research traps at the tail end of run.

- Suggestion was made to change the wording in Management Considerations to remove reference to specific measures like weekend closures. Instead emphasise that exploitation is above reference levels. Comment was made that specific suggestions are useful. Say exploitation is too high; here are some specifics. Response - Northwest Miramichi can be fished because it has a mud bottom. Southwest is hard to fish because hard bottom makes it difficult to keep nets in place. Hence no fishing effort in Southwest. It would be preferable to have all fishing below confluence of branches, so that there is not excessive pressure on the (presumed) stock of one branch.

Research Recommendations:

- Need for some work on reference points.

Working Paper: Chaput, G., P. LeBlanc and R. Crawford. 2001. Assessment of the Margaree River gaspereau fishery, 1997 to 2000. DFO Can. Stock Assess Sec. Working Paper 2001/18.

Referees: Jamie Gibson

Rapporteur: Ross Jones

Issues/Concerns: (including response)

- What is the definition of recruitment? - It is the number of mature spawning fish.
- What is the affect of the variability in the mean age of alewife and its impact on the analysis of natural mortality? - There is very little affect.
- There was a concern that the spawner per recruit analysis was overestimating the situation and ignored the density dependent factors and assumed a constant exploitation rate.
- A suggestion was made to use the inverse of the replacement line on the SPR model, which would lower the slope and give a more conservative prognosis. There was also a concern that the multiple spawners were ignored in the analysis.
- Clarification is needed on the conservation definition for gaspereau. Fixed harvest rate or fixed escapement policy for the different stocks.
- How is a depletion estimate calculated on a migratory stock? - Not depletion through time but as stock migrated through the fishery. CPUE from logbooks was used and should be declining as the fish migrate through the fishery.
- Was the reduced fishing effort producing increased escapement? Concern was expressed about the low larval index value for 2000. Is the larval index a good indicator of escapement? - Yes it is a good indicator of escapement but not necessarily for predicting future returns.
- There was evidence to support the effectiveness of the new management plan put in place in 1996. Although results were incomplete the proportion of year classes harvested (fishing mortality rates) were the lowest on record.
- Concern over the general statement that F should be less than or equal to M. There is evidence that other gaspereau stocks have a F value greater than M. Also fishers may oppose moving from a situation where F is slightly greater than M to one of F<M. - If F=M it is certainly not a bad point to be at.

- Concern that we still have a rebuilding stock and that the precautionary approach should prevail. A point was made that only 19 of the 59 licenses were active and therefore the potential for increased exploitation still exists.

- Although fishing mortality in recent years has been below reference levels, it is a rebuilding stock and closure dates remain important and the status quo should be maintained.

- What are criteria for changing the management plan? Suggestions were made that fixed spawning escapement is better management target than a fixed harvest. A target of one million fish?

Research Recommendations:

- Investigate the relationship that both low water level and low stock abundance increase catchability and/or exploitation rates. When stocks are at low abundance they school closer to shore and therefore more likely to be caught in the fishery.

Working Paper: Gibson, J. 2001. Gaspereau River Alewife Stock Status Report. RAP Working Paper 2001/23.

Referees: N/A

Rapporteur: Rod Bradford

Issues/Concerns: (including response)

- It was suggested that before the adopting 400,000 spawners as the necessary escapement that one needs to know the turbine mortality rate. The author agreed.

- The question was asked as to whether or not there is sufficient biological/yield information to recommend to management a reduced exploitation rate? Response was that the stock exhibits the traits of an overfished stock. However, the carrying capacity of the system has not been reliably estimated.

- What are the reference points for the Gaspereau River stock? Response: we first need to consider the need to reduce F to rebuild the stock.

Research Recommendations:

- Need to determine the effect on F of adjusting fishing effort.

Working Paper: Jessop, B. 2001. Stock status of alewives and blueback herring returning to the Mactaquac Dam, Saint John River, N.B. RAP Working Paper 2001/21.

Referees: N/A

Rapporteur: Shane O'Neil

Issues/Concerns: (including response)

- There was some discussion regarding the presentation of Figure 9 in document [Temporal variability in annual mean age at first spawning of virgin fish]. The point was raised that showing the mean age at first spawning for a cohort would be useful in this figure.

- Discussion revolving around the issue of survival rates. There is an apparent change in survival rates based on the evidence in Figure 13 [Temporal change in the annual exploitation rate and proportion of previous spawners in the stock of alewives and blueback herring from the Mactaquac Dam, Saint John River, 1973-2000]. Suggestion was made to look at survival rates by plugging data into Jamies' model. Response ->Can't separate freshwater from marine survival rates.

- Concern was expressed that the decline in survival was due to factors other than fishing. Response -> Data was not presented to conclude it is a fishing or other effect.

- It was expressed that the point of mortality from spawning to spawning being higher in recent years than previously should be clarified.

- Concern regarding figure 13. Interpretation in document wasn't supported by committee

- Conclusion was voiced that this stock is heavily fished but not overfished.

Research Recommendations

- It was recommended to look at natural mortality rates

- It was recommended to calculate repeat spawning survival and relate to environmental variables (e.g. turbine effects of Mactaquac Dam)

STRIPED BASS

Working Paper: Douglas, S.G., and G.C. Chaput. Status of striped bass (*Morone saxatilis*) in the Gulf of St. Lawrence in 1999 and 2000. RAP Working Paper 2001/20.

Referee: Rod Bradford

Rapporteur: Larry Marshall

Issues/Concerns: (including response)

- Reliance on Nappan tagging and recapture data may bias estimates because of possibility that first part of the run is excluded. Response:- CPUEs for bass in the gaspereau fishery should indicate whether or not the population has been completely sampled. Supplementary comment that males can be recaptured many times when waiting for the arrival of females and that perhaps the best CPUEs would be those based on female fish.

- Length-frequency distributions and fewness of older aged fish suggest that despite significant fishery closures, the large bass are missing. Response:- fishing between 1996-97 removed large number of big fish and that winter mortality and possibly environmental conditions and waste contaminants are deliminators of large (and small) fish in the northern extremity of their range. Supplementary comment suggests that mortality rates based on age-structured loss may be used to tease out whether or not the mortality is on older fish or possibly a result of fewness of numbers and heavy mortality on young-of-year fish. YOY fish are exploited as bycatch in the smelt fishery and despite delays in the smelt season continue to appear in catches. Further restrictions on smelt seasons warrant demonstration that the savings would in fact contribute to significant increases in the spawning population (high proportion of the savings would succumb to over winter mortality.

- Evaluation of the status of the population with the International Union for the Conservation of Nature's (ICUN) criteria was hotly discussed, particularly since it differs from COSEWIC criteria which are more dependent on genetic integrity, population size and habitat, i.e., ICUN criteria would not indicate that these fish rated listing. These comments lead to a discussion of the persistence of the stock, evidence for listing and the signal which would indicate that the stock was endangered and close to extirpation. Response:- the stock at less than 5,000 spawners is already being managed in a precautionary sense but that the population has likely always been low with the exception of occasional circumstances that led to relatively exceptionally high year classes.

Research Recommendations:

- Search for a forensic marker that would simplify the process of identifying Miramichi-origin fish in other Gulf rivers or as bycatch in the possession of others within or outside the Gulf.

- Propose a survey to estimate bycatch of striped bass throughout the Gulf and work towards the estimation of F on age-0 fish.
- Examine the spawning stock by size and establish the maximum reproductive rate (?)
- Examine mortality rates based on age-structured loss to tease out whether or not mortality at older ages is excessive.
- Continue working towards the establishment of limit reference points for the stock.

Working Paper: Bradford, R. 2001. Review of striped bass stock status, Bay of Fundy. RAP Working Paper 2001/40.

Referees: N/A

Rapporteur: Scott Douglas

Issues/Concerns: (including response)

- Question regarding use of run timing in river to infer spawning occurrence and thus provide advice on closures of other fisheries.

- Discussion regarding monitoring juvenile/spawning production in Bay of Fundy rivers. Juvenile surveys on St. John were expected to be nil as others such surveys have shown in the past. A comment was made that one would expect St. John River striped bass to be mainly US fish with a Shubie component. Response: - sampling is being done concurrently to see if one can distinguish US from Shubie fish. Such a differentiation between origins could lead to a relaxation of restrictions on size harvest.

- Discussion regarding possibility of recolonization and issue of why fish became extinct in the Annapolis and St. John rivers. The point raised was that regarding temperatures in the St. John system and the size selective winter survival issue and the need to first address environmental issues before thinking about recolonization (e.g. flow regimes on the St. John due to Mactaquac Dam, water quality issues such as low pH in Annapolis). There has been a lack of research on these issues in the past. Response: - there is a need to identify partners to contribute to research. There is need for public support of recolonization project and there is firstly a need to identify environmental factors responsible for demise because there are fish in these systems that are spawning, but we are not seeing any recruits. The last spawning fish handled was in 1996.

- Discussion regarding extinction risk and possibility that Bay of Fundy striped bass constitute a meta-population. The issue for science is do we have a unique population and is it's prognosis in danger? A comment was made that we don't have any criteria developed yet to identify critical point in striped bass population. Issue with COSEWIC seems to be weakness of habitat criteria. Nothing that would put Shubie stock on endangered list.

Research Recommendations:

- Provide stock status report for Bay of Fundy striped bass with reference points, as logistics in this system do not permit the determination of a population estimate.

Appendix 1. List of Participants

Participant	Affiliation/Address	Telephone	Fax	E-mail	Days of Attendance
Amiro, Peter	Assessment Biologist Department of Fisheries and Oceans Maritime Region: http://www.mar.dfo-mpo.gc.ca/ Science Branch, Diadromous Fish Div. Bedford Institute of Oceanography P.O. Box 1006 (1 Challenger Drive) Dartmouth, N.S. B2Y 4A2	902-426-8104	902-426-6814	AmiroP@mar.dfo-mpo.gc.ca	March 19-21
Bradford, Rod	Species at Risk Biologist Department of Fisheries and Oceans Maritime Region: http://www.mar.dfo-mpo.gc.ca/ Science Branch, Diadromous Fish Div. Bedford Institute of Oceanography P.O. Box 1006 (1 Challenger Drive) Dartmouth, N.S. B2Y 4A2	902-426-4555	902-426-6814	BradfordR@mar.dfo-mpo.gc.ca	March 19-21
Cairns, David	Research Scientist Department of Fisheries and Oceans Gulf Region: http://www.glf.dfo-mpo.gc.ca/ Science Branch, Diadromous Fish Div. P.O. Box 1236 Charlottetown, PEI C1A 7M8	902-566-7825	902-566-7948	CairnsD@mar.dfo-mpo.gc.ca	March 19-21
Chaput, Gérald	Assessment Biologist Department of Fisheries and Oceans Gulf Region: http://www.glf.dfo-mpo.gc.ca/ Science Branch, Diadromous Fish Division P.O. Box 5030 (343 University Ave.) Moncton, N.B. E1C 9B6	506-851-2022	506-851-2147	ChaputG@dfo-mpo.gc.ca	March 19-21
Cook, Adam	MSc student Department Plant & Animal Sciences Nova Scotia Agricultural College http://www.nsac.ns.ca/ 58 River Road Truro, N.S. B2N 5E3	902-893-3951		Amcook@nsac.ns.ca	March 20
Douglas, Scott	Assessment Biologist Department of Fisheries and Oceans Gulf Region: http://www.glf.dfo-mpo.gc.ca/	506-851-3218	506-851-2147	DouglasS@dfo-mpo.gc.ca	March 19-21

	Science Branch, Diadromous Fish Division P.O. Box 5030 (343 University Ave.) Moncton, N.B. E1C 9B6				
Gibson, Jamie	Acadia Centre for Estuarine Research http://ace.acadiau.ca/science/cer/home.htm P.O. Box 115, Acadia University Wolfville, N.S. B0P 1X0	902-585-1311	902-585-1054	Jamie.Gibson@Acadiau.ca	March 19-21
Jessop, Brian	Assessment Biologist Department of Fisheries and Oceans Maritime Region: http://www.mar.dfo-mpo.gc.ca/ Science Branch, Diadromous Fish Div. Bedford Institute of Oceanography P.O. Box 1006 (1 Challenger Drive) Dartmouth, N.S. B2Y 4A2	902-426-2158	902-426-6814	JessopB@mar.dfo-mpo.gc.ca	March 19-21
Jones, Ross	Biological Technician – Southwest NB Department of Fisheries and Oceans Maritime Region: http://www.mar.dfo-mpo.gc.ca/ Science Branch, Diadromous Fish Division P.O. Box 5030 (343 University Ave.) Moncton, N.B. E1C 9B6	506-851-6441	506-851-2147	JonesRA@dfo-mpo.gc.ca	March 19-21
LeBlanc, Paul	Biological Technician – Cape Breton NS Department of Fisheries and Oceans Gulf Region: http://www.glf.dfo-mpo.gc.ca/ Science Branch, Diadromous Fish Div. Bedford Institute of Oceanography P.O. Box 1006 (1 Challenger Drive) Dartmouth, N.S. B2Y 4A2	902-426-5828	902-426-6814	LeBlancPH@mar.dfo-mpo.gc.ca	March 19-21
Levy, Alex	Nova Scotia Power, Inc. http://www.nspower.ca P.O. Box 910 Halifax, N.S. B3J 2W5			LevyA@nspower.ca	March 19 - PM
Mahaney, Blythe	Student Nova Scotia Power, Inc. http://www.nspower.ca P.O. Box 910 Halifax, N.S. B3J 2W5	902-426-2459	902-426-6814	MahaneyB@nspower.ca	March 19 PM, 20 AM
Marshall, Larry	Division Manager Department of Fisheries and Oceans Maritime Region: http://www.mar.dfo-mpo.gc.ca/	902-426-3605	902-426-6814	MarshallL@mar.dfo-mpo.gc.ca	March 19-21

	Science Branch, Diadromous Fish Div. Bedford Institute of Oceanography P.O. Box 1006 (1 Challenger Drive) Dartmouth, N.S. B2Y 4A2				
Meade, Ken	Environmental Biologist Nova Scotia Power, Inc. http://www.nspower.ca P.O. Box 910 Halifax, N.S. B3J 2W5	902-428-6582	902-428-6101	MeadeK@nspower.ca	March 19 PM, 20 PM
Myers, Ransom	Killam Chair of Ocean Studies Department of Biology Dalhousie University http://is.dal.ca/~biology2/index.html Halifax, N.S. B3H 3J5	902-494-1755		Ranson.Myers@Dal.ca	March 19-PM only
O'Neil, Shane	Assessment and Enhancement Coordinator Department of Fisheries and Oceans Maritime Region: http://www.mar.dfo-mpo.gc.ca/ Science Branch, Diadromous Fish Div. Bedford Institute of Oceanography P.O. Box 1006 (1 Challenger Drive) Dartmouth, N.S. B2Y 4A2	902-426-1579	902-426-6814	OneilS@mar.dfo-mpo.gc.ca	March 19-21
Robichaud-LeBlanc, Kimberly	Special Projects Biologist Department of Fisheries and Oceans Maritime Region: http://www.mar.dfo-mpo.gc.ca/ Science Branch, Diadromous Fish Div. Bedford Institute of Oceanography P.O. Box 1006 (1 Challenger Drive) Dartmouth, N.S. B2Y 4A2	902-426-5836	902-426-6814	RobichaudK@mar.dfo-mpo.gc.ca	March 19-21
Stevens, Greg	Senior Advisor Anadromous Department of Fisheries and Oceans Maritime Region: http://www.mar.dfo-mpo.gc.ca/ Fisheries Management Branch Marine House P.O. Box 1035 (176 Portland Street) Dartmouth, N.S. B2Y 4T3	902-426-5433	902-426-9683	StevensG@mar.dfo-mpo.gc.ca	March 19, 20 AM
Weldon, Jim	Regional Coordinator Department of Fisheries and Oceans Gulf Region: http://www.glf.dfo-mpo.gc.ca/ Aquaculture and Recreational Fisheries P.O. Box 5030 (343 University Ave.) Moncton, N.B. E1C 9B6	506-851-3431	506-851-3027	WeldonJ@dfo-mpo.gc.ca	March 20 AM

Appendix 2. Invitation Letter

Fisheries and Oceans Canada / Pêches et Océans Canada

Science Branch
Gulf Fisheries Management Region
343 avenue Université, Moncton, (NB)
E1C 9B6

February 26, 2001

Distribution

Subject: Peer review of Gaspereau and Striped Bass

This letter gives notice of the Scientific Peer Review Session for the principal gaspereau and striped bass stocks of the Maritimes provinces. In total six assessments documents will be reviewed at this session.

Presentation of assessments commences at 10:00 am Monday, March 19, in the 3rd Floor Boardroom of the Canadian Coast Guard Base, Parker St., Dartmouth, NS. Presentations will continue at 8:30 AM Tuesday, March 20 in the Ron Trites boardroom, 4th Floor of the Polaris Building of the Bedford Institute of Oceanography (BIO). Review of a draft of the Stock Status documents for Gaspereau will commence at 1:00 PM March 20. The review of the stock status documents for the striped bass will begin at 8:30 AM March 21 in the Atlantic Geoscience Centre Boardroom, on the 5th Floor of the Murray Building at BIO. The review is scheduled for completion at 12:00 PM March 21.

You and /or representatives of your organization are welcome to come and participate in the discussion of those stocks in which you have interest. Formal referees have been named for each stock presentation, but time is being made available fir others, such as yourself, who might have questions or wish elaboration on a particular stock assessment.

Enclosed is a proposed agenda and schedule for presentation of the various stock assessments. Should you have any questions, please do not hesitate to contact Denise LeBlanc at (506) 851-6253.

We hope your interests will be represented at the review. However, we are unable to assist with travel expenses.

Sincerely yours,

Direction des sciences
Région de la gestion des pêches du Golfe
343 avenue Université, Moncton, (NB)
E1C 9B6

le 26 février, 2001

Liste de diffusion

Object: Examen par les pairs des stocks de gaspareau et bar rayé

La présente lettre tient lieu d'avis pour la séance d'examen scientifique par les pairs des stocks de gaspareau et de bar rayé dans la Région des Maritimes et la Région de gestion des pêches du golfe. Cet examen vise les principaux stocks de gaspareau et de bar rayé de la Région. Au total, six documents d'evaluation seront examinés dans le cadre de la séance.

La présentation de l'évaluations des stocks débutera lundi le 19 mars à 10h00, au 3ième étage à la salle de conférence du Base de la Garde Côtière, rue Parker, Dartmouth, N-É.
La présentation va continuer le lendemain matin à 8h30 dans la salle de conférence Ron Trites , 4ième étage du bâtiment Polaris de BIO. L'ébauche du document de l'évaluation des stocks du gaspareau va être révisée à 13h00 à la même endroit. Le document de l'évaluation des stocks du bar rayé débutera le 21 mars à 8h30 dans le centre Geoscience Atlantique au 5ième étage du bâtiment à IOB. Le tout se terminera à 12h00 le 21 mars.

Vous êtes invité, en compagnie d'un ou de plusieurs représentants de votre organisation, à participer à la discussion touchant à ces stocks à l'égard desquels vous avez un intérêt. Des arbitres officiels ont été désignés pour les présentations relatives à chacun des stocks, mais du temps a été prévu pour que des personnes comme vous puissent poser des questions ou apporter des précisions sur l'évaluation d'un stock en particulier.

Vous trouverez ci-joint l'ordre du jour proposé et le calendrier des exposés pour les évaluations relatives aux divers stocks. Si vous avez des questions, n'hésitez pas à communiquer avec Denise LeBlanc au (506) 851-6253.

Nous espérons que vos intérêts seront représentés à cet examen, mais nous ne pouvons malheureusement pas assumer de frais de déplacement.

Veuillez agréer, l'expression de mes salutations distinguées,

Appendix 3. Distribution List

P. Pattern / Tusket River Gaspereau Dip Netters Assoc.	Chief F. Pierro / Wagmatcook First Nation	L. Marshall/ DFO, Dartmouth
R. Meadows / Stewiack	J.F. Prosper / Mi'Kmaq Fish and Wildlife	G. Sanipass / Bouctouche First Nation
R. Robinson / Inland River Fishery Association	Pr. Second Peter Barlow / Union of New Brunswick Indians	Chief C. Sark / Lennox Island First Nation
R. Angus / Cardigan Hatchery	Dave Gillis / Fisheries and Aquaculture Division	D. Cairns / DFO, Charlottetown
Chief M. Augustine / Red Bank First Nation	P. Cronin / N.B. Natural Resources and Energy	A. Caissie / Fundy National Park
E. Tremblay / Kouchibouguac	A.Curry / Biology /UNB	G. Chaput/ DFO, Moncton
P. Barlow / Indian Island First Nation	R. Mawhinney / Fundy North Fishermen's Association	Chief Kerry Prosper / Afton First Nation
Chief A. Bernard / Eskasoni First Nation	M. Hill / NS Dep. of Fisheries, Pictou	P. Amiro / DFO, Dartmouth
Chief W. Dedam Burnt Church First Nation	M. Jonowicz / NB Fisheries and Aquaculture	Chief T. Paul / Millbrook First Nation
C. Denis / Eskasoni Fish & Wildlife	C. Milley / Afton First Nation	Chief L. Paul Millbrook First Nation
B. Donald / Miramichi Watershed Mgmt.	T. Martin / Native Council of Nova Scotia, Truro	D. Younker / Fisheries and Aquaculture
B Dubee / Biologiste Newcastle	D. Meerburg / DFO Ottawa	H. Stone DFO, St. Andrew's
Chief G. Ginnish Eel Ground First Nation	A. Smith / Fisheries and Wildlife PEI	Edmond Drysdale / Union des pêcheurs, Shediac
M. Hambrook Miramichi Hatchery	L. Paulin DFO, Moncton	Reginald Comeau / Union des pêcheurs, Tracadie-Sheila
Chief A. Metallic / Listuguj First Nation	Mr. R. Robinson / Cody's, Queen's Co. NB	Joseph LaBelle / NB Fish Packers Ass., Moncton
B LaVallée / NB Aboriginal Peoples C.	G. Stevens / DFO, Dartmouth	Paul Cormier / Ministère des pêches et Aquaculture
Chief R. Levy Big Cove First Nation	L. Sochasky / St. Croix International Waterway	Claude Williams / Ministère des pêches et Aquaculture
Don MacLean / NS Department of Fisheries	S. Splude / N.-B. Aboriginal Peoples Council	Michel Albert / DFO, Tracadie-Sheila
Chief Reg. Maloney Indian Brook First Nation	F. Wheaton / Fish and Wildlife, Moncton	Jean Gauvin / ACIA, Shediac
Chief L. Marshall / Chapel Island First Nation	T.Toner N.S. Power	Glen Ferguson / DFO, Tracadie- Sheila
Chief E. Martin Eel River Bar First Nation	G. Tuplin / Native Council of P. E. I.	F.Whoriskey / Atlantic Salmon Federation
C. Milley / Mi'Kmaq Fish and Wildlife	S. O'Neil DFO, Dartmouth	Chief Ben. Paul Papineau First Nation

Appendix 4. Meeting Schedule

Monday March 19, 2001 / lundi le 19 mars 2001- DFO-CCG Base, 3rd Fl. Boardroom, Parker St., Dartmouth, N.S.	
10:00	Introduction, review of agenda / Introduction, revue de l'ordre du jour
10:15	Review of Miramichi River and Gulf NB gaspereau fishery and stock status / Revue de l'état des stocks de gaspareau de la rivière Miramichi et le golfe Nouveau-Brunswick
12:00	Lunch break / Pause – déjeuner
13:00	Review of Margaree River and Gulf NS gaspereau fishery and stock status / Revue de l'état des stocks de gaspareau de la rivière Margaree et le golfe Nouvelle-Ecosse
14:45	Health break / Pause-santé
15:00	Gaspereau River Alewife Stock Status Report
16:15	Review of Saint John River at Mactaquac gaspereau stock and southwest New Brunswick fisheries/ Revue de l'état des stocks de gaspareau de la rivière Saint-Jean à Mactaquac et des pêcheries du sud-ouest Nouveau-Brunswick
17:30	End of session / Fin de la session
Tuesday March 20, 2001 / mardi le 20 mars 2001 – Ron Trites Boardroom, 4th Fl. Polaris Bldg. BIO, Dartmouth, N.S.	
8:30	Review of striped bass stock status, southern Gulf of St. Lawrence / Revue de l'état du stock de bar rayé du sud du golfe du Saint-Laurent
10:15	Health break / Pause-santé
10:30	Review of striped bass stock status, Bay of Fundy / Revue de l'état des stocks de bar rayé de la baie de Fundy
12:15	Lunch break / Pause – déjeuner
13:15	Review gaspereau stock status report / Revue du rapport de l'état des stocks de gaspareau
17:30	End of session / Fin de la session
Wednesday March 21, 2001 / mercredi le 21 mars 2001- AGC Boardroom, 5th Fl. Murray Bldg. BIO, Dartmouth, N.S.	
8:30	Review striped bass stock status report / Revue du rapport de l'état des stocks de bar rayé
12:00	End of peer review meeting / Fin de la réunion

Appendix 5. Meeting Remits

Gaspereau – Maritimes

In support of the fisheries of 2001 and beyond and until the next full assessments are conducted (5-year), assessment of the gaspereau stocks of the Maritime provinces will be reviewed. The last stock status report for gaspereau of the Maritime provinces dates to 1996 (DFO D3-17).

Specifically, the fisheries and status of the following gaspereau stocks will be reviewed:

- Miramichi River, Gulf New Brunswick
- Margaree River, Gulf Nova Scotia
- Returns to Mactaquac Dam on the Saint John River
- Any additional stocks where information is available

Specific questions to be addressed in the stock assessment include:

- Updates of the historical landings in the fisheries by statistical district and geographic area
- Description of fisheries management plans
- Estimation of catch at age in sampled fisheries
- Estimation of relative abundance in sampled fisheries
- Review of changes in biological characteristics
- Estimation of mortality rates (fishing, other) relative to reference levels
- Environmental or habitat issues of relevance to stock status
- Prognosis for the assessed stocks

A Stock Status Report for the Maritime provinces will be produced with associated supporting research documents.

Striped Bass – Maritimes

The last striped bass stock status report dates to 1998 (DFO D3-22(1999)). In support of the management plan developed for striped bass in the Maritimes in 1999, a review of stock status and changes in status relative to expectations will be conducted. Specifically, the following stocks will be reviewed:

- southern Gulf stock (spawning in the Northwest Miramichi)
- Shubenacadie stock (Bay of Fundy)

Specific questions to be addressed include:

- Review of the present management plans
- Estimation of spawning stock size and age structure
- Definition of reference points
- Sources and estimation of mortality rates relative to reference levels
- Environmental or habitat issues of relevance to stock status
- Prognosis of the assessed stocks

A Stock Status Report for the Maritime provinces will be produced with associated supporting research documents.

Appendix 6. List of Documents Tabled

Chaput, G. and G. Atkinson. 2001. The gaspereau fisheries (*Alosa pseudoharengus* and *A. eastivalis*) of the Miramichi River with updates on the fishery of the Richibucto River of Gulf New Brunswick.. RAP Working Paper 2001/19.

Chaput, G., P. LeBlanc, and R. Crawford. 2001. Assessment of the Margaree River gaspereau fishery 1997 to 2000. RAP Working Paper 2001/18.

Bradford, R. 2001. Review of striped bass stock status, Bay of Fundy. RAP Working Paper 2001/40.

Douglas, S.G. and G.Chaput. 2001. Status of striped bass (*Morone saxatilis*) in the Gulf of St. Lawrence in 1999 and 2000. RAP Working Paper 2001/20.

Jessop, B.M. 2001. Stock status of alewives and blueback herring returning to the Mactaquac Dam, Saint John River, N.B. RAP Working Paper 2001/21.

Jessop, B.M. 2001. A brief assessment of the commercial gaspereau fishery on the lower Saint John River, N.B. RAP 2001/22.

Gibson, A.J.F. and R.A. Myers. 2001. Gaspereau river alewife stock status report. RAP Working Paper 2001/23

Appendix 7. List of Research Recommendations

RESEARCH RECOMMENDATIONS:

Taken from Papers:

Miramichi River and Gulf NB gaspereau (WP# 19)

- Methods to assess trends in fishing mortality over time such as those dealing with abundance at length should be considered.
- Sampling from trapents further upriver should be considered to address the question of distinct runs between the Northwest and Southwest Miramichi.
- Sampling at the DFO index trapnets should be conducted to more appropriately characterize the spawning run into alewife and blueback herring.
- Logbooks, which provide useful data regarding timing and abundance over time, should be distributed to more rivers.

Gulf of St. Lawrence striped bass (WP#20)

- Commercial fishermen in the Northwest Miramichi could be contracted to operate trapnet(s) before the beginning of gaspereau season to ensure that striped bass arriving early in the season are sampled adequately.
- A new method of marking striped bass needs to be evaluated due to susceptibility to lymphocystis caused by punccture wounds from the tagging gun.
- Resume sampling of the open-water commercial smelt fishery of the Miramichi estuary and extend sampling to Richibucto and surrounding estuaries for verification of young-of-the-year distribution.
- Initiate young-of-the-year sampling in summer and fall with the American eel fishery in the Miramichi Estuary and along the coast of the southern Gulf of St. Lawrence.
- Continue and develop a more rigorous beach seine survey of the Miramichi and surrounding estuaries to help develop an index of abundance.

Taken from Rapporteur Reports:

Miramichi River and Gulf NB gaspereau (WP# 19)

- It was recommended that further work is needed on reference points.

Margaree River gaspereau (WP#18)

- It was recommended to investigate the relationship that both low water level and low stock abundance increase catchability and/or exploitation rates. When stocks are at low abundance they school closer to shore and therefore more likely to be caught in the fishery.

Saint John River gaspereau (WP#21 and 22)

- It was recommended to look at natural mortality rates.
- It was recommended to calculate repeat spawning survival and relate to environmental variables (e.g. turbine effects of Mactaquac Dam).

Gaspereau River gaspereau (WP#23)

- It was recommended that there is a need to determine the effect on F of adjusting fishing effort.

Gulf of St. Lawrence striped bass (WP#20)

- It was recommended to search for a forensic marker that would simplify the process of identifying Miramichi-origin fish in other Gulf rivers or as bycatch in the possession of others within or outside the Gulf.

- It was recommended to propose a survey to estimate bycatch of striped bass throughout the Gulf and work towards the estimation of F on age-0 fish.

- It was recommended to examine the spawning stock by size and establish the maximum reproductive rate.

- It was recommended to examine mortality rates based on age-structured loss to tease out whether or not mortality at older ages is excessive.

- It was recommended to continue working towards the establishment of limit reference points for the stock.

Bay of Fundy striped bass (WP#40)

- It was recommended to provide a stock status report for Bay of Fundy striped bass with reference points as logistics in this system do not permit the determination of a population estimate.

MANAGEMENT CONSIDERATIONS

Taken from papers

Miramichi River and Gulf NB gaspereau (WP# 19)

- Exploitation rates estimated from backward cohort summation for the 1982 to 1996 Miramichi fisheries generally exceeded the reference fishing levels. The freeze on licenses should be continued.
- Of the 34 trapnets licensed for the Miramichi River, 15 are located in the Northwest Branch of the river. Some effort should be displaced from the Northwest Miramichi downriver where the mixed runs can be expoited or into the Southwest Miramichi to relieve some pressure from the Northwest run.
- The weekend closures in May should be maintained to reduce the exploitation rate on the alewife. If exploitation rates on blueback herring rise above recent years' levels, then weekend closures in June should be reconsidered.

Margaree River gaspereau (WP#18)

- Exploitation rates in 1996-2000 with respect to reference levels: The estimated exploitation rates prior to 1996 are greater than F_{lim} (reference exploitation rate suggested for the Margaree fishery). The exploitation rates between 1996 and 2000 are estimated to have declined to levels closer to, but likely still above F_{lim}.
- Effectiveness of the 1996-2000 management plan: There are strong indications that the management plan of 1996 to 2000 was effective in reducing the exploitation rates. An expanded age composition in the fishery and larger average size resulting from a higher proportion of older fish are desirable and anticipated stock status indicators.
- Conservation definition for gaspereau:
    - Minimum spawning stock biomass as a conservation definition for the Margaree River gaspereau has not been defined. One threshold reference point (conservation) has been defined as the spawning stock which produces less than half a maximum recruitment. A conservation limit of one million fish would not be an unreasonable threshold level.
    - A fixed harvest rate strategy (suggested as appropriate for ensuring the sustainability of fisheries) of 0.32 to 0.4 for the Margaree gaspereau fishery, would take advantage of large recruitments and increase the spawning escapement.
- Prognosis for 2001-2005: Improved escapement in 1997 to 2000 will provide a higher chance of recruitments in excess of two million fish over the next five years. If exploitation rates continue to be low relative to historical levels, more older and larger fish should be available to the fishery and for spawning. An expanded age structure in the catch and in the spawning escapement is desirable and should be possible if exploitation levels are maintained or further reduced from present levels.

Saint John River gaspereau (WP#21)

- A program of active stock management to achieve alewife escapements greater than 1,000,000 fish and blueback herring escapements greater than 400,000 fish is required to further elucidate the evolving nature of gaspereau stock-recruitment to Mactaquac Lake. Maintenance of the existing management plan levels of escapement should maintain stock abundance sufficient to achieve current escapement targets and continue the existing fishery near current levels.

Gulf of St. Lawrence striped bass (WP#20)

- There are no indications that recruitment will rebuild this population above the conservation requirement before 2003. Existing spawners require the maximum possible degree deterrence of poaching and, since there is no longer a harvestable surplus of fish:
    - Reduce or eliminate interception of striped bass in gillnet based First Nation fisheries for other species of food fish.
    - Communicate to all parties (First Nations, commercial fishers, recreational fisheries, provincial governments, watershed groups, etc.) the need for improved collaboration in order to realize effective conservation.